

## TOTAL CROSS SECTION AND SELF-SHIELDING EFFECTS OF THE CR-52 ISOTOPE MEASURED AT KYIV RESEARCH REACTOR NEUTRON FILTERED BEAMS

Olena O. Gritzay, Volodymir V. Kolotyi, Nataliya A. Klimova , Oleksandr I. Kalchenko , Mykola L. Gnidak , Oleksandr I. Korol' , Petro M. Vorona

*Institute for Nuclear Research, Kyiv, Ukraine*

Self-shielded values of total neutron cross section of a set of Cr-52 samples were measured with 24 and 58 keV neutron filtered beams at Kyiv Research Reactor. These investigations were done to obtain the real unshielded values of Cr-52 cross section for neutron energies 24 and 58 keV, as the Evaluated Nuclear Data Libraries (ENDF) give the dispersion of cross section for these energies 60 and 40%, correspondingly. Meanwhile, the needs of reactor technology urge on the accuracy of this value better than 3% in the energy range 10 eV-20 MeV.

For 24 keV filter we used here the composition consisted of Fe, Al, S, B-10 to receive the quasi-monoenergy beam with the average energy 24.34 keV and for 58 keV filter we used correspondingly Ni-58, S, V, B-10, Al, Pb to receive the beam with energy 58.8 keV. Beam line purity was about 99% and 94%, correspondingly.

High intensity of neutron beams made it possible the measurements with accuracy better than 1%, and as the result, we received the set of measured cross sections for 12 samples with thickness in the range (0.0137-0.400) at/barn. The linear extrapolation to zero thickness gives the values  $2.218 \pm 0.064$  barn (2.9% accuracy) for average energy 24 keV and  $7.31 \pm 0.14$  (1.9%) for 58 keV. Now we consider these results as preliminary and continue their processing.

ENDF libraries give the total cross section values, averaged on filter widths for 24 keV filter in the range 1.19 - 2.82 barn and for 58 keV one in the range 4.50 - 7.03 barn.